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M. Pasteur at the close of his paper stated verbally that, although the urine of a healthy man contains no extraneous germs of organic bodies, in most cases it comes into contact with such germs at the moment of its emission at the extremity of the urethral canal, or in the surrounding air. He also described the very simple apparatus he employed to repeat Dr. Bastian's experiments with decisive results. It is a pity that no details of this are given in *Comptes rendus*.

Dr. Bastian's reply to Pasteur's criticism, and the latter's rejoinder, will be found in *Comptes rendus* for July 31st and August 7th; they add nothing to the preceding. — *Monthly Microscopical Journal*, October.

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## THE DESTRUCTION OF BIRDS BY TELEGRAPH WIRE.

BY DR. ELLIOTT COUES, U. S. A.

THIS is a subject which has already attracted deserved attention in Europe, and I believe that much has been said about it, particularly by German writers. But in this country the facts in the case seem to have been to a great degree overlooked, or at any rate insufficiently set forth in the random notices which, like the accounts of the mortality caused by light-houses, have occasionally appeared. Yet the matter is one of much interest, as I shall here take opportunity to note. Few persons, probably, even among ornithologists, realize what an enormous number of birds are killed by flying against these wires, which now form a murderous net-work over the greater part of the country. Until recently, I had myself no adequate idea of the destruction that is so quietly, insidiously, and uninterruptedly accomplished. My observations do not enable me to form even an approximate estimate of the annual mortality, and I suppose we shall never possess accurate data; but I am satisfied that *many hundred thousand* birds are yearly killed by the telegraph. The evidence I shall present may be considered sufficient to bear out a seemingly extravagant statement.

I recently had occasion to travel on horseback from Denver, Colorado, to Cheyenne, Wyoming, a distance of one hundred and ten miles, by the road which, for a considerable part of the way, coincided with the line of the telegraph. It was over rolling prairie, crossed by a few affluents of the South Platte, along the eastern base of the Rocky Mountains. The most abundant birds of this stretch of country, at the time (October), were horned

larks (*Eremophila*), flocks of which were almost continually in sight; and the next most characteristic species was Maccown's bunting (*Plectrophanes Maccownii*). Almost immediately upon riding by the telegraph wire, I noticed a dead lark; and as I passed several more in quick succession, my attention was aroused. The position of the dead birds enabled me to trace cause and effect, before I actually witnessed a case of the killing. The bodies lay in every instance nearly or directly beneath the wire. A crippled bird was occasionally seen fluttering along the road. Becoming interested in the matter, I began to count, and desisted only after actually counting *a hundred* in the course of one hour's leisurely riding — representing perhaps a distance of three miles. Nor was it long before I saw birds strike the wire, and fall stunned to the ground; three such cases were witnessed during the hour. One bird had its wing broken; another was picked up dying in convulsions from the force of the blow. The eyeballs of several dead ones I examined were started from their sockets, and the feathers of the forehead were torn off, indicating a violent blow upon the head; but in most cases there was left no outward mark of the fatal internal injury. Along some particular stretches of wire where, for whatever reason, birds had congregated, the dead ones averaged at least one to every interval between the poles; sometimes two or three lay together, showing where a flock had passed by, and been decimated. The great majority of the birds destroyed consisted of larks; I noticed perhaps half a dozen buntings, one meadow starling (*Sturnella magna neglecta*), and one green-winged teal (*Querquedula Carolinensis*). The proportion of larks was probably due in the main simply to their greater abundance; but I presume that their singularly wayward, impulsive flight may have increased the risk of striking the wires. They were the only birds I saw knocked down; and I noticed, or fancied I noticed, some hesitation and confusion in their flight when the flocks crossed the line of wire.

From these facts, which I simply narrate, one may attempt to estimate, if he wishes, the extent of the destruction which, as I have already said, goes on incessantly. Given, one hundred dead birds to three miles of wire, all killed, perhaps, within a week; or, given three birds seen to strike and fall in an hour; how many are annually killed by the telegraph wires of the United States? I should be sorry to suppose, however, that the rate of destruction I witnessed is not at or near the maximum;

for I have seldom seen more birds to the acre than during the day to which I particularly refer, and never under circumstances more likely to result in the disaster of which I speak.

Usually, a remedy has been or may be provided for any unnecessary or undesirable destruction of birds; but there seems to be none in this instance. Since we cannot conveniently abolish the telegraph, we must be content with fewer birds. The only moral I can discern is that larks must not fly against telegraph wires.

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### RECENT LITERATURE.

POWELL'S EXPLORATION OF THE COLORADO RIVER.<sup>1</sup> SECOND NOTICE. — Our notice of the second part of this admirable report has been long deferred, but the portion on the structural geology of the region possesses additional interest on account of the publication of Major Powell's report on the geology of the Uinta Mountains, among which one branch of the Colorado, the Green River, takes its rise. As a contribution to the theory of formation of mountains the report is one of special interest. The Rocky Mountains, our author shows, have been carved out by rains and running water from a great block of sedimentary rocks which suffered erosion from the time of its first appearance above the sea. The peculiar form of the mountains is due largely to the soft nature of the rocks and the dryness of the climate. "Though little rain falls, that which does is employed in erosion to an extent difficult to appreciate by one who has only studied the action of water in degrading the land in a region where grasses, shrubs, and trees bear the brunt of the storm. A little shower falls, and the water gathers rapidly into streams and plunges headlong down the steep slopes, bearing with it loads of sand, and for a few minutes, or a few hours, the district is traversed by brooks, and creeks, and rivers of mud. . . . When a great fold emerges from the sea, or rises above its base level of erosion, the axis appears above the water (or base level) first, and is immediately attacked by the rains, and its sands are borne off to form new deposits." Thus the mountains have never perhaps been higher above the level of the sea than at present; for example, the "Uinta Mountains were not thrust up as peaks, but were carved from a vast, rounded block left by a retiring sea, or uplifted from the depths of the ocean, and their present forms are due to erosion!"

As to the drainage of this plateau Mr. Powell concludes "that the present drainage was established in rocks now carried away from the higher regions, but [with remnants] still seen to be turned up against the flanks of most of the ranges." Thus the present river valleys in

<sup>1</sup> *Exploration of the Colorado River of the West and its Tributaries*. Explored in 1869, 1870, 1871, and 1872, under the Direction of the Secretary of the Smithsonian Institution. Washington. 1875. 4to, pp. 291. With Map and Plates.